

REMARKS

Applicant affirms the election of claims 20-50 previously made via telecon with the Examiner. Claims 1-19 have been amended as withdrawn. Claims 1-19 have been filed in a divisional application. No amendment to inventorship is required.

Claim Rejections – 35 USC § 102

The Examiner has rejected claims 20-22, 24-26, 28-40, 46, and 48 “under 35 U.S.C. 102(b) as being clearly anticipated by Loan et al. (US 6,136,725).” Office Action, page 3. Applicant requests reconsideration in light of the amendments to the claims and in light of the arguments below.

Loan is geared towards “(a) method for chemical vapor deposition include(ing) dispensing a precursor to a vaporizer”. *Loan*, Abstract, in pertinent part, emphasis added. In *Loan*’s discussion of the vaporization subsystem, especially Column 5, lines 15-36, the discussion is of precursors, liquid and solid. Of particular interest is the illustration of a process in the *Loan* patent:

Films that can be deposited by this system include, but are not limited to, the following: aluminum from dimethyl aluminum hydroxide (DMA), copper from one of the CUT(hfac)(tmvs, tevs, teovs) precursors, tantalum nitride from a solid precursor such as TaBr.sub.4, titanium nitride from a liquid precursor such as tetrakisdiethylamido titanium (TDEAT), tetrakisdimethylamido titanium (TDMAT) or TiBr.sub.4, low-k dielectric films from hexasilsesquioxane (HSQ) or a fluorinated tetraethylorthosilicate (TEOS), and tantalum oxide from tantalum pentaethoxide (TAETO) and either ozone or N.sub.2 O.

Loan, Column 19, lines 9-19

In each and every case of the precursors listed in the aforementioned section, which directly precedes a more detailed description of process, the deposited films are not the same chemical as the precursor. Thus, nowhere does *Loan* disclose “supplying a first chemical to a heated vaporization chamber; vaporizing said first chemical; and supplying the vapor of said first chemical to a process chamber, thereby coating said substrate with said first chemical”, as

recited in claim 20, as amended. Nowhere does *Loan* disclose “delivering a first amount of a first chemical to a vaporization chamber; vaporizing said first chemical; and delivering the vaporized first chemical into said process chamber, thereby coating said substrate with said first chemical”, as recited in claim 40, as amended. Applicant requests withdrawal of this rejection with regard to independent claims 20 and 40. Claims 21, 22, 24-26, and 28-39 are allowable at least for the reason of their dependence on claim 20. Claims 46 and 48 are allowable at least for the reason of their dependence on claim 40. Applicant requests withdrawal of this rejection with regard to these claims. Applicant presents further arguments below.

With regard to claims 24-31 and 40-50, these claims involve or include a dehydration step. The Examiner has stated, with regard to *Loan*, that “(t)he chamber is taught to be evacuated and purged with an inert gas (column 7, lines 60-67), which reads on the dehydration step, according to the applicant’s own specification (paragraph 48).” Office Action, pages 3-4.

Paragraph 48 of the present specification is seen here in its entirety: “High pressure gas distribution manifold 731 provides high pressure gas that is routed to the gas actuated valves by the triggering of solenoid actuated valves in valve bank 740.” Applicant disputes the Examiner’s characterization of this paragraph as being a link to a disclosure in the cited reference. Applicant asserts that the description of a piece of hardware capable of multiple uses does not disclose a particular use in a particular process claim. Again, with regard to *Loan*, the Examiner has referenced hardware as disclosing of process. Applicant disputes this type of reference in this case. Specifically, the cited passage reads:

In parallel with the vaporization and gas-flow-control subsystems 12, 14, a process gas subsystem 150 supplies additional reactant, purge and other process gases to the process chamber 70. The illustrated subsystem 150 includes sources of argon 152, helium 154, and

nitrous oxide (N.sub.2 O) 156. Gas flow from each of these sources is regulated by a plurality of valves 162/164/169 and 161/163/168 with a mass flow controller 165/166/167.

Loan, Column 7, lines 60-67

Loan goes on to state that “(n)itrous oxide from source 156 flows though valve 157 into process chamber 70 for reaction with the vaporized precursor delivered through delivery conduit 40.” Col. 8, lns. 1-3, emphasis added. Further, “(h)elium from source 154 is delivered through valve 157 into process chamber 70, where it is channeled through a conduit for release between a substrate chuck 74 and a substrate 88 upon which vapors are deposited to improve the transfer of heat between the substrate chuck 74 and the substrate 88.” Col. 8, lns. 10-16, emphasis added. Later, “(d)uring cleanup of the vaporizer sub-process, in step 340, no precursor is introduced into the vaporization chamber 26. In step 341, isolation valve 42 isolates the entire vaporization subsystem 12 from the other subsystems. Step 342 then fully opens valve 160. Next, in step 343, Argon gas provided from valves 161 and 162 and mass flow controller 165 is introduced into the vaporization chamber 26 until a pressure of approximately 50 torr is measured at pressure sensor 34.” Col. 15, lns. 55-62, emphasis added. Based upon these uses of the gasses mentioned in the reference cited by the Examiner, it is clear that it is improper to infer a particular process use based upon a mention of hardware in the absence of a description of that process, especially when the use inferred by the Examiner is not one of the many uses noted. Thus, *Loan* does not teach or disclose “dehydrating a substrate”, as recited in claim 24, nor does it teach or disclose “dehydrating said substrate” as recited in claim 40.

The Examiner has mentioned a purported silane disclosure in the section on this rejection, although silane is mentioned in claims 42-45, which are not rejected here. Applicant will respond nevertheless. With regard to claims to claims 42-45, which recite the use of silane, the Examiner has stated that “(s)ilane is taught to be one of the reactants

(column 2, lines 5-15). Office Action, page 3. Applicant asserts that the cited portion of the reference is discussion of systems other than that of the cited patent, as it is in the Background section. In addition, the cited passage presents a contrast between the mentioned chemicals and the process of the cited patent. In no way does this section teach or disclose the use of silane as recited in the processes of claims 42-45.

Applicant requests withdrawal of the rejection of claims 20-22, 24-26, 28-40, 46, and 48 under 35 U.S.C. 102(b) for at least the aforementioned reasons.

Claim Rejections – 35 USC § 103

The Examiner has rejected claims 27 and 49 “under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725).” Office Action, page 4. Applicant requests reconsideration in light of amendments to the claims and in light of the arguments below. Firstly, however, Applicant asserts that claims 27 and 49 are allowable at least for the reason of their dependence upon independent claims 20 and 40, respectively, allowability of which was argued above.

In contrast to his other rejections, the Examiner has not referenced a particular point in the cited reference with regard to this rejection. Further, the two rejected claims, from different claim lines, are parts of distinctly different process steps. However, with regard to claim 27, this is in regard to dehydration, which was discussed above. Applicant requests withdrawal of this rejection with regard to claim 27.

With regard to claim 49, Applicant has been unable to find in *Loan* any reference to “replacing the lost volume of chemical in the first chemical reservoir with an inert gas ... wherein said inert gas is nitrogen.” as recited in claim 49. Applicant requests withdrawal of this rejection with regard to claim 27.

The Examiner has rejected claims 23 and 47 “under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725).” Office Action, page 4. Applicant asserts that

claims 23 and 47 are allowable at least for the reason of their dependence upon independent claims 20 and 40, respectively, allowability of which was argued above.

The Examiner has rejected claims 41-45 "under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725)." Office Action, page 5. Applicant asserts that claims 41-45 are allowable at least for the reason of their dependence upon independent claim 40, allowability of which was argued above.

The Examiner has rejected claims 41-45 "under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725), as applied to claims above, and further in view of Uhlenbrock et al (US 6,214,729 B1)." Office Action, page 6. Applicant asserts that claims 41-45 are allowable at least for the reason of their dependence upon independent claim 40, allowability of which was argued above

Summary

Applicant has addressed all rejections. Applicant asserts that all claims are in a condition for allowance and respectfully requests allowance of all claims. If the Examiner should have any questions regarding this response, the Examiner may contact the undersigned at (831) 462-8270.

EXPRESS MAIL LABEL NO:

EQ 703186643 US

Respectfully submitted,



Michael A. Guth
Attorney for Applicant
Reg. No. 45,983